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March 2, 2017

Via Electronic Mail

Joseph A. Gowers
Remedial Project Manager
Emergency and Remedial Response Division
USEPA Region II
290 Broadway, 19th Floor
New York, New York 10007-1866

Subject: Phase IA Cultural Resources Review
Ringwood Mines/Landfill Superfund Site
OU-2 Remedial Design
EPA ID No. NJD980529739

Dear Mr. Gowers:

Enclosed is a completed Phase IA cultural resources review of Operable Unit No. 2 (OU-2) of the Ringwood Mines/Landfill Superfund Site. The purpose of this study was to evaluate whether the three land areas of concern (AC); Peters Mine Pit (PMP), O'Connor Disposal Area (OCDA), and Cannon Mine Pit (CMP), comprising OU-2 might contain archaeological or historical resources that could be affected by planned remediation and restoration activities.

The study involved a cultural resources file search covering a 1-mile radius study area around the three land ACs, at the New Jersey Historic Preservation Office and the New Jersey State Museum, as well as an online search for pertinent information in the New York Cultural Resources Information System. In addition, background history was reviewed to understand the development of mining in the Ringwood area and a field inspection was completed.

Based on information developed during this review, the report concludes that the proposed activities for completion of the OU-2 remediation will result in no historic properties affected. The report also recommends that the proposed remediation and restoration activities proceed as currently planned without additional cultural resource studies. The accompanying attachments provide documentation that supports this conclusion and recommendation.

Please contact us if you have questions or comments on the enclosed report.

Sincerely,

Cornerstone Engineering Group, LLC

Gary J. DiPippo
Professional Engineer
NJ License No. 24GE02646100

Enclosure: Attachment A – Report
Attachment B – Figures
Attachment C - Photolog

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Phase IA Background Review and Archaeological Assessment
Ringwood Mines/Landfill Superfund Site Operable Unit 2

ATTACHMENT A

REPORT TEXT

Report Certification

The material and data in this report were prepared under the supervision and direction of the undersigned.

Tetra Tech, Inc.

Christopher L. Borstel

Christopher L. Borstel, Ph.D., RPA
Cultural Resources Specialist/Archaeologist

ATTACHMENT A

Phase IA Background Review and Archaeological Assessment
Ringwood Mines/Landfill Superfund Site Operable Unit 2
Borough of Ringwood, Passaic County, New Jersey
USEPA ID No. NJD980529739

I. INTRODUCTION

Tetra Tech, Inc., Parsippany, New Jersey (Tetra Tech), under Subcontract to Cornerstone Engineering Group, LLC, conducted a Phase IA archaeological sensitivity assessment of three Land Areas of Concern (Land ACs) within the 500-acre Ringwood Mines/Landfill Superfund Site (Site), which is situated in the Borough of Ringwood, Passaic County, New Jersey (Figure 1—see Attachment B). The U.S. Environmental Protection Agency (USEPA) Site ID No. is NJD980529739. The three Land ACs are designated as the Peters Mine Pit (PMP) Area, the O'Connor Disposal Area (OCDA), and the Cannon Mine Pit (CMP) Area (Figure 2). Together these three Land ACs comprise Operable Unit No. 2 (OU-2) of the Ringwood Mines/Landfill Superfund Site.

Pursuant to the Record of Decision (ROD) of June 30, 2014, USEPA has selected a remedial action plan for OU-2 that generally involves excavation of waste and contaminated soil, filling, consolidation of fill and waste materials, construction of Engineered Geotextile/Soil Caps, site grading, and restoration of vegetation. Connected to the remediation effort, the selected remedial action plan includes construction of a Borough Recycling Center over the Engineered Soil Cap within OCDA.

The Site is situated in the former Ringwood iron mines area of northern Passaic County, which saw numerous episodes of iron mining over a period of over two hundred years. Owing to the long history of mining in Ringwood and to anticipated ground disturbances from remediation activities, USEPA requested a study to evaluate potential effects on archaeological historic resources that might be located within the OU-2 remediation area. This Study provides USEPA with cultural resources information that assists USEPA in its compliance with cultural resources requirements of CERCLA/SARA and Section 106 of the National Historic Preservation Act, 1966, as amended.

This Phase 1A review and assessment involved several subtasks:

- Background research to understand the historical context of iron mining operations, prior remediation actions at the three Land ACs, and other potential archaeological or historical resources (e.g., prehistoric Native American archaeological sites);
- File review for historic resources within a 1-mile radius study area at the New Jersey Historic Preservation Office (HPO), Trenton, the archaeological site files of the New Jersey State Museum (NJSM), Trenton, and through New York State Historic Preservation Office's (NY-SHPO) online Cultural Resources Information System (NY-CRIS);
- Field inspection of the three Land ACs comprising OU-2; and
- Synthesis of the foregoing information to evaluate the potential for archaeological resources in the OU-2 remediation area.

The study was conducted in December 2016 and January 2017 by Tetra Tech cultural resources specialist Christopher L. Borstel, RPA, Ph.D., with the assistance of Evan Robinson, M.A., and Gail Hellman. Sydney B. Marshall, RPA, Ph.D., provided technical oversight and a peer review of this study.

II. LOCATION AND SETTING

The three Land ACs comprising OU-2 are situated in a moderately rugged section of New Jersey's Highlands physiographic province 0.6 to 1.7 miles south of the New York State border and approximately 16.5 miles northwest of the Passaic County Courthouse in Paterson. Ancient metamorphic and igneous rocks in the Highlands contain numerous small ore bodies that were economically important from the Colonial era to the early twentieth century (Harper 2013:147-151). The region produced copper, zinc, and, most widespread, iron ores in scattered districts (Bayley 1910; Cook 1868; Hotz 1952; Lenik 1999; Ransom 1966). This zone of mineral deposits trends northeast-southwest through northwestern New Jersey and South into adjoining New York State. Situated in the Ramapo Mountains of northern Passaic County, the Ringwood iron ore district comprises about a dozen mines and prospects in an area about 1 mile long by 0.75 miles wide. The district is immediately north and west of Ringwood village center, at the intersection of Margaret King Avenue (also called Ringwood Avenue, County Route 698) and Peters Mine Road (Hotz 1952:216, Figure 46). Wanaque Reservoir is to the south, and Monksville Reservoir is west of the district.

The three Land ACs comprising OU-2 are situated at elevations of approximately 500 to 565 feet above sea level in and adjacent to low order stream valleys tributary to the Ringwood River (Figure 2). The PMP Area and adjacent OCDA are situated between the stream valley and associated wetlands and a steep 400-foot-high hill locally known as Whaleback Mountain. Another hill of similar height, Hope Mountain, rises just to the north of the PMP Area. The CMP Area is on a ridge spur overlooking a small valley south of Whaleback Mountain and about 1 mile south of the PMP Area. The region of OU-2 is lightly populated and has a mix of single family residential homes, commercial buildings, and municipal facilities strung along the historical roads and along newer development roads ending in cul-de-sacs. Rugged land outside valley floors is forested and includes Ringwood State Park and other woodlands managed by the New Jersey Department of Environmental Protection (NJDEP).

III. REMEDIATION ACTIVITIES AND AREAS OF POTENTIAL EFFECTS

At the time of preparation of this Phase 1A assessment, a Draft Final Remedial Design for OU-2 was completed (Cornerstone, 2016) and formed the basis for defining the limits of disturbance. The USEPA completed its review of the Draft Final Remedial Design, and the Final Remedial Design is currently being prepared. The limits of disturbance are unchanged from the Draft Final Remedial Design. Figures 3a to 3d in Attachment B of the Draft Final Remedial Design provide final grading plans for the three Land ACs and the site plan for the construction of a Borough of Ringwood Recycling Center in the OCDA per the remedial action plan selected by the USEPA.

In accordance with the USEPA's 2014 ROD, the remediation activities at the three Land ACs may be summarized as follows:

PMP Area

- Excavation of soil and fill to the water table, unless drums and paint waste are found to extend below the water table and can be removed, in which case, excavation will also include such materials;
- Segregation of excavated materials for re-use or off-site disposal based on the nature of the materials and the results of laboratory analyses, as applicable;
- Placement of compacted fill to achieve grades above the water table and provide overall grading of the area as necessary for Engineering Cap construction;
- Installation of an Engineered Geotextile/Soil Cap as an Engineering Control and restoration with indigenous vegetation consistent with Ringwood State Park; and

- Institutional Controls and long-term monitoring, maintenance, and reporting.

The remedial action and restoration plans for the PMP Area focus on the former open mine pit, but are not concerned with the 1940s-era ruins of mine buildings on the hillslope southwest of the pit, nor with the abandoned underground mine shafts. After remediation is complete at the PMP Area, vegetation restoration will be completed both on the cap and in the immediately surrounding area, including the staging area at the end of the paved portion of Peters Mine Road.

OCDA

- Excavation of fringe area fill and consolidation within the OCDA;
- Installation of an Engineered Geotextile and Soil Cap followed by redevelopment of the area above the Engineered Cap as a Recycling Center for the Borough of Ringwood;
- Construction of the Recycling Center above the Engineered Cap once installed which would also function as a protective feature above the cap (e.g., asphalt pavement, etc.);
- Additional Engineering Controls (e.g. fencing, signs, etc.) to control access;
- Restoration of vegetation in areas outside of the Engineered Cap;
- Restoration/mitigation of wetlands disturbed by the remedy implementation; and
- Institutional Controls and long-term monitoring, maintenance, and reporting.

The new Borough Recycling Center will replace an existing town facility on Cable House Road.

CMP Area

- Excavation of drums of waste, if any are encountered, and proper offsite disposal;
- Placement of compacted fill to promote proper drainage of the area;
- Installation of an Engineered Geotextile/Soil Cap as an Engineering Control and restoration with vegetation;
- Additional Engineering Controls (e.g., fence, boulders, signs, etc.) to control access; and
- Institutional Controls and long-term monitoring, maintenance, and reporting.

Remediation and restoration at the three Land ACs will involve varying amounts of disturbance of existing ground within the limit of disturbance (LOD), depending upon the specific Land AC.. Excavation, consolidation and/or relocation of waste/fill, movements of heavy equipment, and other construction activities all have the potential for disturbance of soil and ground features. Vegetation restoration would involve slight to modest disturbance, but only at the PMP Area will vegetation restoration extend substantially beyond the LOD as necessary for blending in with the surrounding ground surface elevation and existing woodlands. Areas where ground disturbance will or may occur comprise the area of potential effects (APE) for archaeological resources. The APE is "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (Title 36 Code of Federal Regulations [CFR] Part 800.16(d)). The APE is often conceptually subdivided into the direct effects APE, where ground disturbance might take place as just described due to

excavation, construction, and maintenance activities. In addition, there is the indirect effects APE, where visual, vibrational, or auditory effects might occur.

With the exception of the construction of the Borough Recycling Center on part of OCDA Engineered Soil Cap, the long-term permanent visual result of remediation activities in OU-2 will be to increase surface grades by up to a few feet and changes in contour, which in the long term, will be ameliorated by revegetation of the remediated areas with appropriate native vegetation. The planned Borough Recycling Center will be a largely paved, all-weather work yard facility with a single small, one-story building and an open-bay structure for keeping different types of recyclables separate. The low height of these elements means that, like the landscape alterations, the potential for visual effects is limited to the immediate vicinity of the involved remediation and restoration area. Consequently, the remainder of this analysis focuses primarily on potential direct effects of the remediation activities.

Table 1 details key locational information about the three Land ACs and provides area estimates for the direct effects APE. Collectively, OU-2 has a direct effects APE of approximately 20.63 acres. As noted, the indirect effects APE is limited to the immediate vicinity of areas planned for remediation and restoration.

Table 1: OU-2 Locations of Land Areas of Concern and Dimensions of Direct Effects APEs

	PMP Area	OCDA	CMP Area
Location *[Street addresses have not been assigned to the subject parcels, or are not available in the sources consulted.]*	West side of Peters Mine Rd., 0.07 mile north of Sheehan Dr.	East side of Peters Mine Rd., from 0.03 mile north of Cable House Rd. to 0.06 mile north of Sheehan Dr.	0.08 mile north-northwest of the end of Horseshoe Bend Rd. and immediately west and south of the end of Van Dunk Ln.
Block and Lot	Block 601, Lot 14.01 (nearly the entirety of PMP Area) and Block 601 Lot 13 (~0.29 acre of LOD and 0.63 acre additional restoration area)	Block 601, Lot 14 (nearly the entirety of OCDA) and Block 601, Lot 14.01 (~0.16 acre at northern end)	Block 603, Lot 13
Owner of Record	NJDEP (Lot 14.01) is the primary owner and Borough of Ringwood (Lot 13)	Borough of Ringwood (Lot 14) is the primary owner and NJDEP (Lot 14.1)	Borough of Ringwood
Centroid Lat., Long.	41.146589°, -74.269102°	41.143743°, -74.267320°	41.132579°, -74.275330°
Approx. Dimensions	320 x 575 feet (remediation area); 550 x 550 feet (restoration area)	670 x 1,350 feet	370 x 510 feet, plus 575-foot-long graveled access road
LOD	3.45 acres	11.49 acres	2.49 acres
Additional Work Areas	~2.9 acre additional restoration area	None	0.1 acre addition restoration area; 0.2 acre along existing ~15 x 575 ft. gravel access road
Direct Effects APE	6.35 acres	11.49 acres	2.79 acres

Sources: Cornerstone Environmental, Google Earth, and NJ GeoWeb, October 2016-January 2017

Key: APE—Area of Potential Effects; Lat., Long.—Latitude and Longitude in decimal degrees; LOD—Limit of disturbance.

IV. HISTORICAL BACKGROUND

The following background review summarizes numerous sources, including Cook (1868), Bayley (1910), Hotz (1952), Ransom (1966), Greenwood (1975), American Society of Mechanical Engineers (1978), and Lenik (1999). Historical images and maps of Ringwood district iron mines are found in Ransom (1966), Lenik

(1999), Iron Miners (2011), and New Jersey Geological and Water Survey (2011). Images of the contemporary condition of the Peters Mine and associated aboveground ruins are provided by AbandonedMines.net (2017) and Mindat.org (2017).

Colonial settlement of the Ramapo Mountains of northern New Jersey began in the mid-eighteenth century after the discovery of valuable minerals, notably the ores of iron and zinc. Settlers established mines that formed the nuclei of villages and dispersed rural settlement on both sides of the New Jersey-New York border. Key mining areas were Ringwood and Sterling Hill in New Jersey and Sterling Lake in New York. Ringwood was settled about 1742 as a result of the development of iron mines. Of particular importance at Ringwood was magnetite iron ore, which was of relatively high quality. The mining of this ore helped support the local economy from Colonial times into the early twentieth century.

In the eighteenth century, several mine pits operated in the Ringwood area. Among the most important of these mines were Peters Mine and Cannon Mine. Both mines opened around 1740, and a blast furnace was constructed nearby to produce pig iron and other products from the local ore. Cornelius Board, a Welsh miner, partnered with the Ogden family of Newark to begin these mines and to construct the earliest infrastructure for ironmaking. By 1765, Board and the Ogden family sold their interests to the American Iron Company, run by Peter Hasenclever. Hasensclever used the Ringwood mines and blast furnace to build up his iron production company into a Colonial-era business empire. In the 1760s and 1770s, in the mode of many rural American entrepreneurs on the cusp of the Industrial Revolution, he encouraged development of the Ringwood area by building a grist mill, saw mill, workers' houses, and four new iron forges.

Around 1771, Hasenclever returned to England and was replaced by Robert Erskine, who was instrumental in operating Ringwood area mines, furnaces, and forges in support of the American cause during the Revolutionary War. Iron produced by Ringwood supplied the Continental Army with iron tools and supplies. Erskine also became involved with helping Gen. George Washington with his military campaigns by producing over 200 highly accurate maps for the army. In addition, he proposed and designed an iron chain that spanned the Hudson River at West Point, which prevented British warships from sailing up the river to Albany.

In 1764, there were eight blast furnaces and 79 forges in New Jersey, and by 1834 there were 12 blast furnaces and 109 forges. The number of open mines and furnaces throughout the state would rise and fall with the market and as new, larger mining operations opened up in other parts of the country. The financial depression in 1873 created a drop off in production and forced mines to close. By 1879, the economy was beginning to recover, and iron ore production increased again. In 1880, New Jersey had the most mines open that it ever had, but by 1885 ore production slowed because of the discovery and development of iron ore from the Lake Superior region and the growth of the steelmaking industry closer to those ores in Pennsylvania and Ohio. There was a boom in 1899, with idle mines reopening in the Ringwood area, as well as in Morris and Warren counties. Around the beginning of the twentieth century, iron ore prices fluctuated sharply, and many existing iron mines cycled between activity and idleness as the price of ore rose and fell.

Mirroring patterns in many early, small-scale mining districts in America, the production of Peters and Cannon Mines expanded and contracted through the nineteenth century. The annual production of these mines was subject to national economic trends, which influenced market demand, and on the supply of ores within the individual mine pits and mines. Peters and Cannon Mines were two of the largest of the Ringwood group, and for decades they were among the highest producers in the area. After the death of Robert Erskine in 1780, the mines seem to have had limited production until the 1830s, when Peters and Cannon Mines were reopened for a few years by new owners who were unable to sustain their business. Cannon Mine was then worked almost continually between 1855 and 1879, but during much of this period Peters Mine was apparently idle. A boom in iron ore production at Ringwood around 1880 mirrored that in

New Jersey as a whole, when the number of iron mines in the state reached its all-time peak. During this ore boom, the Ringwood mines produced 896,000 tons of ore.

Production in New Jersey and in Ringwood slowed a few years later, however, high-quality taconite iron ore had been discovered in the Lake Superior region in the mid-1880s. Taconite ore was high-quality, and could be mined and delivered more cost effectively to the iron and steel works in Ohio and Pennsylvania. By 1890, the Cannon and Peters Mines were the only remaining mines in the area still operating; however, Peters was soon declared to be played out. As it turned out, the declaration that Peters Mine was exhausted was four decades premature. Production continued and, in 1899, there was another local iron boom, but, soon after, there was no longer a local furnace to process the ore. The mines closed in 1931 and were acquired by the State of New Jersey in 1936.

A final chapter in the history of Peters Mine began with its takeover by the War Materials Production Board in 1942. The federal government then contracted with the Allen Wood Steel Company to put the mine into standby condition, a process that took a year and cost over $3.9 million (over $54 million in 2016 dollars). During reconditioning, all the old wood frame buildings comprising the surface elements of the mine were demolished and were replaced with modern concrete and wood structures. The ruins of the structures from the 1942-1943 reconditioning are the ones present in and around the PMP Area today. Following reconditioning; however, virtually no ore was mined at Peters. Nor would any significant mining take place there over the next decade and a half, as the mine passed back and forth between several owners and the federal government. By 1961, Peters Mine had been stripped of saleable machinery and equipment and efforts to keep the mine in operating condition ceased.

Surface structures for Cannon Mine were demolished around this time. Cannon Mine Shaft featured a 50-foot-tall head frame, which was a prominent local feature into the 1950s, long after the mine closed. Aerial imagery from HistoricAerials.com shows that the head frame and associated buildings had been removed prior to 1965.

In 1965, Ringwood Realty Corporation (RRC), a subsidiary of the Ford Motor Company, purchased over 800 acres of land in the Borough of Ringwood, including the Site. From late 1967 until mid-1971, RRC disposed of waste materials at PMP, OCDA, and CMP, in accordance with State and local approvals. In 1970, RRC began transferring portions of the Site to the Borough and others. In 1973, the remaining property owned by RRC was donated to the State of New Jersey. Random dumping of waste materials by others occurred before, during, and after the 4-year period that Ford related wastes were disposed of at the Site.

The Site was placed on the Superfund National Priorities List (NPL) in 1983. Between 1984 and 1988, Ford, with USEPA oversight, conducted a Remedial Investigation there, followed by a Feasibility Study (FS), and remedial action including removal actions. Following this work, USEPA removed the Site from the NPL in 1994, based on a finding that cleanup actions were complete. However, in 1995, 1998, and 2004, additional areas of paint waste were identified at the Site, prompting further cleanup actions (e.g., drum and paint waste removal in the OCDA). The USEPA restored the Site to the NPL in 2006, and additional remediation activities consisting of additional Remedial Investigation (RI), sludge removal actions, risk assessment, additional FS activities, and remedial design were conducted. These activities are currently ongoing for OU-2's PMP Area, CMP Area, and OCDA. In addition, supplemental RI, FS and continued monitoring is being conducted for OU-3, Site-Related Groundwater.

From a historical and archaeological perspective, the history of mining, landfilling, and environmental remediation suggests that there is a low likelihood that substantial and potentially significant archaeological resources related to mining, or to earlier Native American activities remain at any of these areas. Lenik (1999) summarizes the preservation patterns for the industrial archaeology of mining operations of the Ramapo region as follows: "[A discontinuous cycle of prospecting, excavation of iron ore, cessation, and reopening]

resulted in the physical alteration or destruction of early mining components at each site. Previously-existing structural features were often reworked or partially destroyed…. Reopening [or repurposing] the mines resulted in the development of new structures and features" and the partial or complete obliteration of earlier ones.

V. INVENTORIED HISTORIC RESOURCES IN 1-MILE STUDY AREA

An archaeological site and historic properties file review was completed at HPO and NJSM for the New Jersey portion of the study area, and it was completed online using NY-CRIS for the New York portion. The purpose of this file review was to provide due-diligence confirmation no inventoried archaeological or historical properties occur within the APE. The area considered was a 1-mile buffer around the three Land ACs comprising OU-2, a typical review area for the type and extent activities planned for OU-2. This review found that there are no recorded archaeological sites at or in the immediate vicinity of the three Land ACs. The nearest sites are situated in the HPO's half-mile archaeological sensitivity grid squares 0.2 to 0.6 mile east, southeast, and southwest of the CMP Area and 0.6 to 1.2 miles or more from the PMP/OCDA area (Figure 3). All inventoried sites date to the nineteenth or twentieth centuries; none are prehistoric Native American sites. Of the seven inventoried archaeological sites noted in the review of NJSM records, HPO has to date evaluated five for eligibility to the National Register of Historic Places (NRHP). Of the five evaluated sites, HPO has determined that four sites are ineligible for the NRHP, and one site is eligible (Table 2). No archaeological sites inventoried to date within the 1-mile study area are listed on the NRHP.

Table 2: Inventoried Archaeological Sites within the 1-mile study

Site	Description	HPO Archaeological Sensitivity Grid Sq.*	EligibilityStatus
28-PA-140	19th century rural industrial site	EB 35	Eligible
28-PA-192	Historic abandoned railroad grade	EE 34	Not Evaluated
28-PA-199	Mid 19th - mid 20th century foundation	EC 35	Not Evaluated
28-PA-204	Mid 19th - mid 20th century foundation	EE 34	Not Eligible
28-PA-208	Mid 19th - mid 20th century road trace	EE 34	Not Eligible
28-PA-209	Mid 19th - mid 20th century railroad grade	EE 34	Not Eligible
28-PA-210	Mid 19th - mid 20th century railroad ditch	EE 34	Not Eligible

Source: NJSM site files, January 2017

*Specific site locations recorded by the New Jersey and New York SHPOs are confidential and are not to be disclosed in public documents.

Table 3: Inventoried Architectural Properties within the 1-mile Study Area

Property Name (HPO ID and Other Identifiers*)	Location	Type of Property	Date Range	USGS Quadrangle	Eligibility Status (HPO Determination)
Ringwood Manor (HPO No. 2605 / NRIS No. 66000471)	1304 Sloatsburg Rd. Ringwood, NJ	Building	1739, 1764, 1771, 1807, 1853-1887	Greenwood Lake, NY-NJ	Listed (11/13/1966)
Ringwood Municipal Building (HPO No. 2404)	60 Margaret King Rd. Ringwood, NJ	Building	Early 20th century, circa 1920s	Greenwood Lake, NY-NJ	Eligible
Wanaque Reservoir Historic District (HPO No. 4844)	Ringwood and Wanaque Boroughs	Historic District	Early 20th century, circa 1920s	Wanaque, NJ	Eligible

Table 3: Inventoried Architectural Properties within the 1-mile Study Area

Property Name (HPO ID and Other Identifiers*)	Location	Type of Property	Date Range	USGS Quadrangle	Eligibility Status (HPO Determination)
Wanaque Reservoir (HPO No. 4844.028)	Ringwood and Wanaque Boroughs	Reservoir	Early 20th century, circa 1920s	Wanaque, NJ	Eligible as a contributing element of the Wanaque Reservoir Historic District

Sources: NJ HPO files, January 2017, and NY-CRIS, January 2017.
Key: NRIS—National Register Information System

The 1-mile study area contains four inventoried historic resources (Table 3), none of which is directly related to the Peters or Cannon mining operations. These are the Ringwood Manor National Historic Landmark, a large parcel of land situated a minimum of 0.2 mile east of OCDA, the NRHP-eligible Ringwood Municipal Building, located approximately 0.5 mile east of the CMP Area, and Wanaque Reservoir, a contributing element to the NRHP-eligible Wanaque Reservoir Historic District, an arm of which reaches into the southern edge of the 1-mile study area (Figure 3). There are no inventoried archaeological sites or historic resources in the small, New York State portion of the 1-mile study area.

New Jersey HPO files include several cultural resource studies that have been completed within the 1-mile study area. These studies include Rutsch (1984) and Mary Delany Krugman Associates (2001). Of particular relevance to the present review is Lenik and Morrell (1984), which reviewed a large tract along Whaleback Mountain that included both the Peters and Cannon Mine areas. Although noting the possible presence of archaeological features of interest in the Peters Mine area, Lenik and Morrell (1984:35) concluded that "the majority of [their] study area has very low potential for containing cultural resources… Even [in the vicinity of Peters Mine] the potential is not great, since much of the area has been extensively altered."

VI. FIELD INSPECTION

Christopher L. Borstel, Ph.D., RPA, a Secretary of Interior-qualified archaeologist with experience at iron bloomeries and smithies in Vermont, conducted a field inspection of the three Land ACs on January 16, 2017. Dr. Borstel was accompanied on this visit by John Giuliano of Cornerstone, who served as a guide. Dr. Borstel made the following observations of the three areas. A photolog from his visit is included as Attachment C.

PMP Area: This area surrounds the PMP pond and is partially wooded and partially covered by thick shrubs and young trees. There is a ventilation, or air, shaft outside the fenced area on the east side of a gravel road that curves to the left (facing the pit) from the staging area at the southern end of the PMP Area. This structure is outside the remediation and restoration areas. The gravel road curves around the pit, then extends northwest out of the area of interest. The road marks the approximate northerly and easterly limit of planned vegetation restoration at this locality. Southwest of the pit on the hillside outside of the PMP remediation and restoration area is an extensive set of cast-in-place concrete structures (framing for structures) that are the remnants of the 1942-1943 rehabilitation of Peters Mine. Inside the fence line, the ground slopes generally inward toward the center of the area, where the PMP pond is located.

The surface in the immediate vicinity of the PMP is hummocky from a combination of landfill debris (e.g., tires, metal, occasional masonry, bottle glass, upholstery, etc.) and rocks or rock piles. The hummocky terrain

is chaotic and lacked any evident patterning. Remediation activities have previously taken place in the PMP Area, as evidenced by, among other observations, several strips of disturbed, partially revegetated land. Three partial or complete cast-in-place concrete foundations were observed. Two partial or complete foundation slabs were along the southeastern perimeter of the fenced area, while the third (only partially preserved) was situated near the western fence line at the base of the hillslope below the main 1940s-era concrete ruins. No structural elements remained above any of the foundations. Mapping by Edward Lenik (1999: Figure 25) indicates that the buildings in this area were secondary structures of limited importance to mining operations. Field observations and examination of aerial photographs from the 1960s and 1970s lead to a similar interpretation.

The main staging area for remediation activities in the vicinity is an open area located at the end of the paved part of Peters Mine Road. The staging area is relatively flat and appears to have been heavily utilized or graded over a considerable period of time. No standing ruins or foundations were observed within this part of the PMP Area.

OCDA: This area almost immediately adjoins the PMP Area on the southeast. While Peters Mine was in operation, this area was used as a sluice pond to dewater and deposit mine tailings. The ground slopes eastward from Peters Mine Road toward a stream and wetlands area that mark the eastern edge of the land AC. As at the PMP Area, many areas of ground are hummocky, and there is a combination of rock piles, likely mine tailings, and debris in piles and scattered across the surface, such as tires and metal. The western and central parts of this land AC are mostly upland woods—predominantly pole-size trees (implying no more than a few decades of growth), while the eastern portion is lower and a mix of open tall reeds and grasses and wooded wetland. One area near the southern end of the land AC, covering approximately 75 by 250 feet, was clearly visible as a location where prior excavations for remediation had taken place. Such excavations and those related to trenching for evaluation of soil characteristics occur in many parts of the OCDA. The OCDA contains no building remnants.

CMP Area: This area is situated approximately 1 mile south of the PMP and OCDA Areas. Approximately 300 to 450 feet east of the location of the planned location of the CMP Area remediation and restoration activities, at the intersection of Van Dunk Lane and Milligan Lane, there is a fenced mine shaft, which was part of Cannon Mine. New fencing had been recently installed around it. The CMP Area is accessed by an approximately 600-foot gravel access road in good repair that runs from the end of Horse Shoe Bend Road to the CMP Area. The area where remediation and restoration will take place is on a ridge spur overlooking a small stream. No trees were present within the fenced CMP Area, and examination of aerial photographs indicated that trees were removed from the entire area for remediation investigations that were conducted at CMP between approximately 2007 and 2009. The surface of the CMP Area gently slopes to the northwest—i.e., toward the edge of the valley overlooked by this land AC. The evenness of the slope and lack of any surface debris or topographic irregularities other than one or two piles of very large boulders indicates the area was extensively graded. The rock piles were not mine tailing remnants but were probably imported to the location for landscaping or access management. One fenced area at the eastern end of the CMP Area is a subsurface void, but owing to thick vegetation within and around the fence, it was difficult to get a clear view of the feature. Otherwise, the CMP Area contains no aboveground ruins or foundations on the surface, and judging by the evidence of previous remediation activities and grading, it is unlikely that archaeological traces of any such features have been preserved.

VII. CONCLUSIONS AND RECOMMENDATIONS

This study has examined local history, reviewed agency information on inventoried archaeological sites and historic properties within 1 mile of the proposed activities, and conducted a field reconnaissance at the three Land ACs of OU-2. Based on this research, it is concluded that the Land ACs of OU-2 have low potential to

contain any significant pre-contact period Native American or historic period archaeological resources. All three areas have been substantially altered over time due to historic use as iron mines, waste disposal, and ground-disturbing activities during previous remediation actions.

The study found that terrain of the CMP Area appears to have been extensively altered through filling and grading of surface features with refuse and soil to the prevailing grade outside the mine pit. The terrain of the OCDA is a mix of non-significant (and probably displaced) waste rock tailings from Peters Mine, landfill debris, and ground disturbances resulting from previous investigation and remediation episodes. The situation at the PMP Area is slightly more complex, but the conclusion is the same. The portion of this area within the LOD was originally excavated by multiple episodes of mining between the mid-eighteenth and early twentieth centuries. The ground surface of the LOD is characterized by hummocky ground, resulting from several years of use as a landfill, sloping to an open pond, which is the remnant of the mine pit that was subsequently partially filled with landfill debris. When waste disposal activities ceased in the early 1970s, aerial photographs indicate the fill in the mine pit was at grade with the adjoining terrain. Subsequent settling of the fill within the pit was principally responsible for the present topography and allowed water to accumulate as a shallow pond in the center of the pit. Some areas of ground disturbance within the fill also resulted from remediation activities at PMP. Three concrete building slabs and foundations were observed within the remediation area during the field inspection. These features were built during the final, very extensive rehabilitation of Peters Mine during the Second World War. Since virtually no mining took place after this rehabilitation, these elements can be regarded as comprising alterations that post-date the period of significance of the facility. In addition, the buildings were of secondary importance to the planned mining operations and preserve little historically significant information. Their loss through either demolition or burial would not substantially diminish whatever historical significance and integrity the main group of 1940s-era mining structures on the hillside above the mine pit might have.

It is therefore concluded that the proposed work within the three Land ACs comprising OU-2 will result in no effect to historical resources. It is recommended that the proposed remediation and restoration activities may proceed as planned, without further cultural resources study or documentation.

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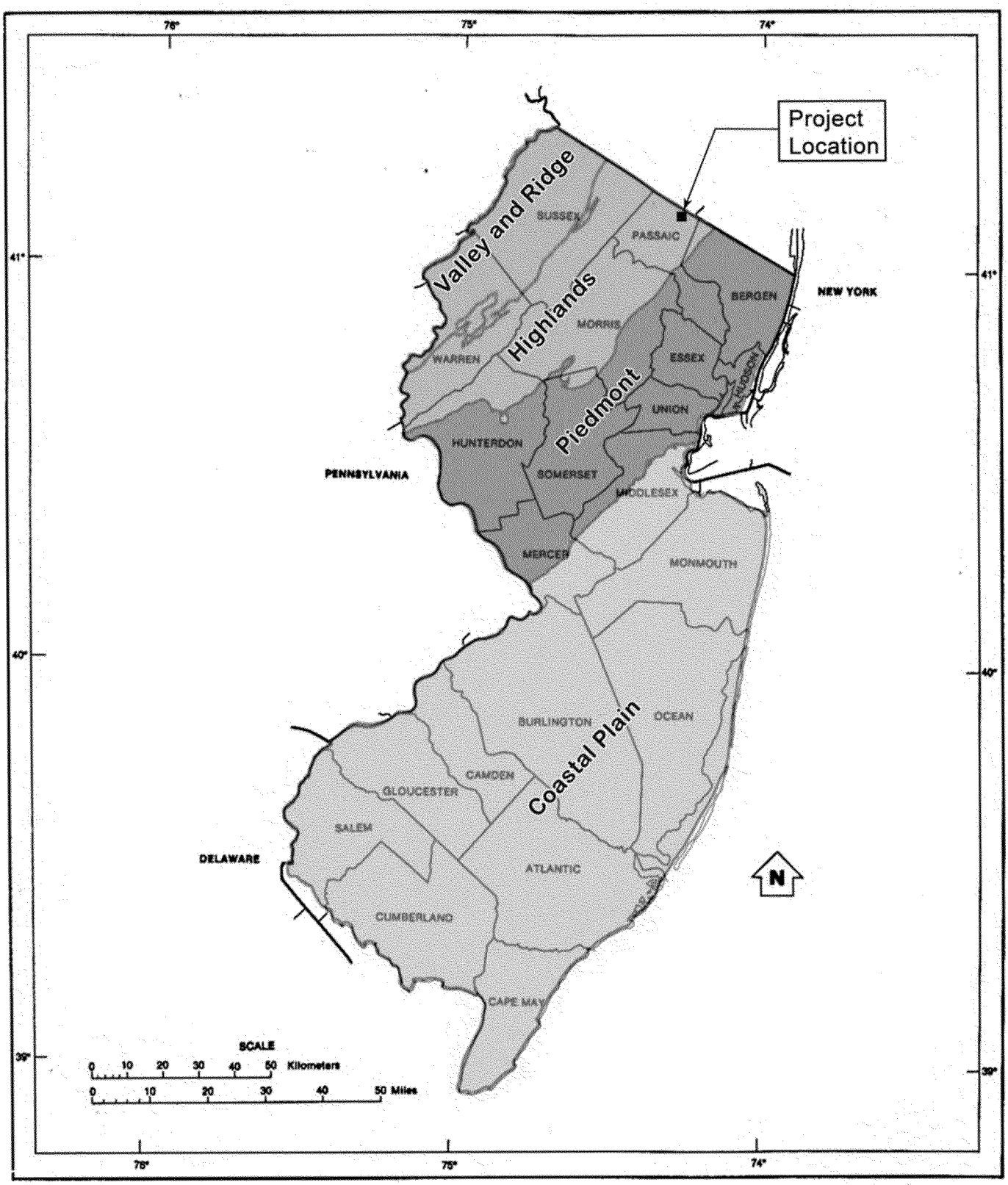
Phase IA Background Review and Archaeological Assessment
Ringwood Mines/Landfill Superfund Site Operable Unit 2

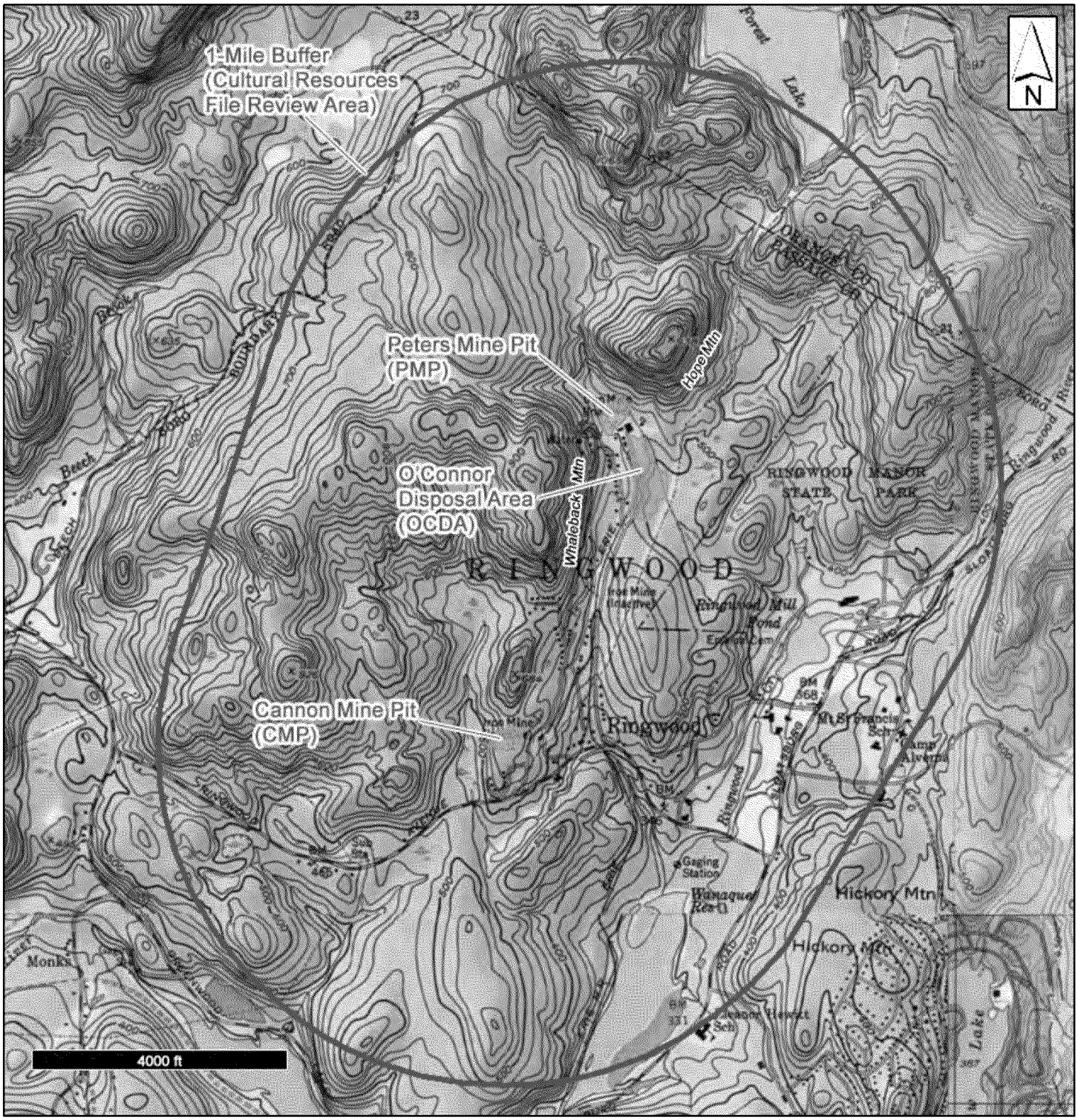
ATTACHMENT B

FIGURES



Base map sources: U.S. Bureau of the Census via http://www.lib.utexas.edu/maps/county_outline.html (county outline map) and NJ Geological and Water Supply Survey at http://www.state.nj.us/dep/njgs/geodata/provinces.jpg (physiographic provinces)

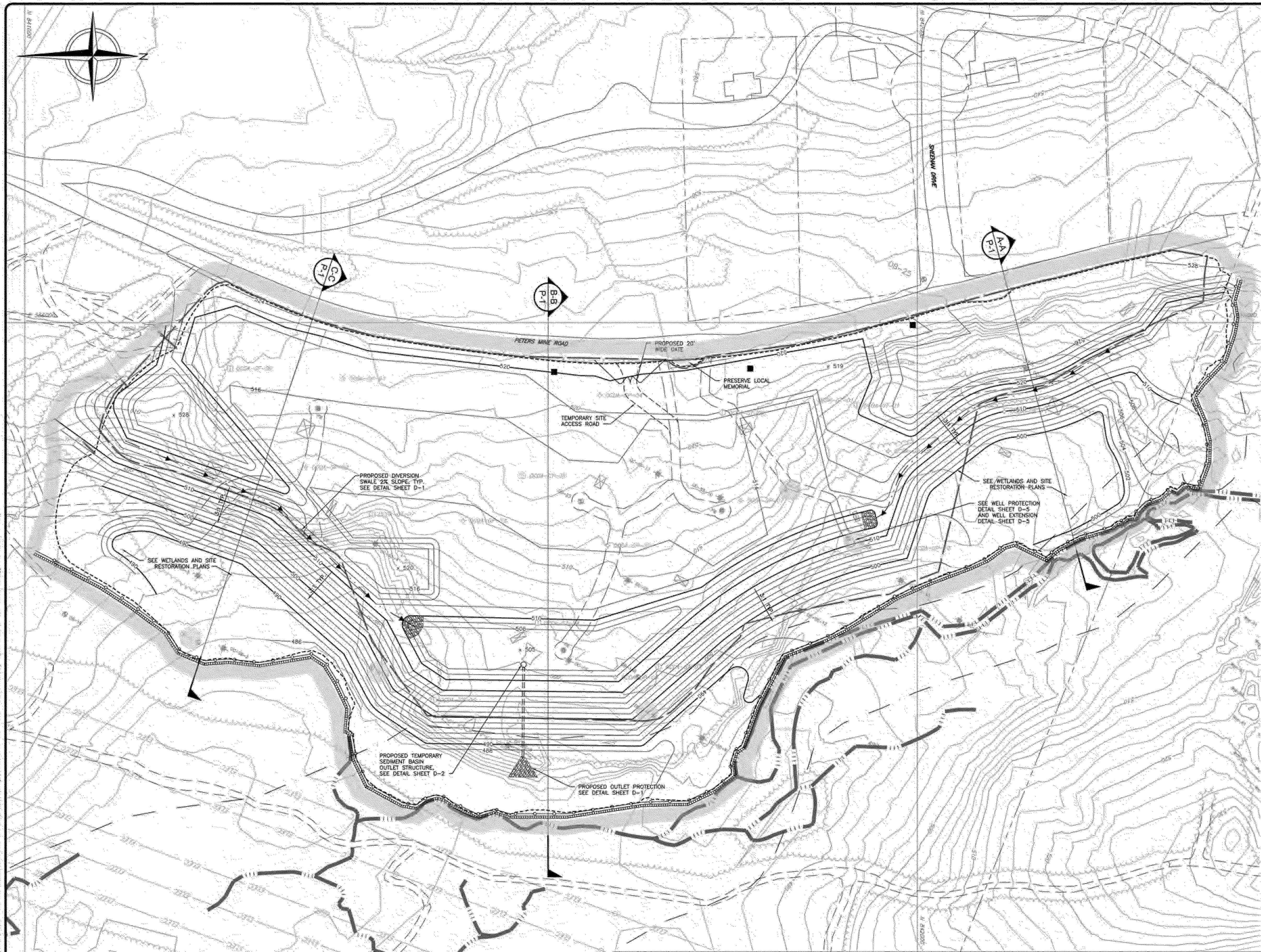
Figure 1: Project Location with New Jersey's Physiographic Provinces.



Base maps: Wanaque, NJ; Greenwood Lake, NY-NJ, Sloatsburg, NY-NJ; and Ramsey, NJ, USGS 7.5-minute quadrangles

Figure 2: Project Area.

Figure 3a: PMP Grading Plan



LEGEND:

FOR ADDITIONAL LEGEND, SEE SHEET NT-1

Restoration Area

Figure 3b: OCDA Grading Plan

NOTES:

1. FOR ADDITIONAL NOTES SEE SHEET NT-1.
2. RELOCATE PERMANENT CHAINLINK FENCING AROUND LIMIT OF WORK, AS NECESSARY.
3. CAP AREA SHALL HAVE GEOTEXTILE FABRIC COVER WITH SOIL FILL, TOPSOIL AND VEGETATIVE COVER, SEE DETAIL SHEET D-4. SEDIMENT BARRIER AND TEMPORARY SEDIMENT BASIN AND DIVERSION SWALES SHALL REMAIN IN PLACE UNTIL VEGETATION IS ESTABLISHED.
4. FINAL GRADES CORRESPOND TO LAYOUT OF FUTURE RECYCLING CENTER CONSTRUCTION BY THE BOROUGH OF RINGWOOD.

50 25 0 50 100 150

SCALE: 1"=50'

Gary J. DiPippo, Professional Engineer

Gary J DiPippo 2/9/17

N.J.P.E. Lic. No. 24GE02646100 Date

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 02/17 DRAWN BY SHW DESIGNED BY SHW/GDP/MS CHECKED BY GDP/MS APPROVED BY GDP

cornerstone
A TETRA TECH COMPANY

RINGWOOD MINES/LANDFILL SUPERFUND SITE
OU2 FINAL REMEDIAL DESIGN
RINGWOOD, PASSAIC COUNTY, NEW JERSEY

FINAL GRADING PLAN - O'CONNOR DISPOSAL AREA

SHEET NO. OCDA-4

PROJECT NO. 140802

NOTES:

- THE PROPOSED RECYCLING CENTER IS ENTIRELY WITHIN THE PROPOSED REMEDIAL CAPPED AREA FOR O'CONNOR DISPOSAL AREA AS CONCEPTUALLY SHOWN IN THE FEASIBILITY STUDY FOR OCDA DATED SEPTEMBER 26, 2013.

- A FENCE ALONG THE ENTIRE PERIMETER OF THE REMEDIAL CAPPED AREA IS PROPOSED TO PROTECT BOTH THE REMEDIAL CAP AND SECURITY OF THE RECYCLING CENTER OPERATIONS.

- ONCE THE REMEDIAL DESIGN OF THE CONTINGENCY REMEDY IS UNDERWAY, THE BOROUGH INTENDS TO PROVIDE AN UPDATED COMPLETE DESIGN OF THE PROPOSED RECYCLING CENTER WHICH WILL COMPORT WITH THE REMEDIAL CAP AS DESIGNED, AND APPROVED BY THE AGENCIES.

PETERS MINE ROAD

SHEEHAN DRIVE

PARK BROOK

PROPERTY LINE
EDGE OF PAVEMENT
RIGHT OF WAY LINE
RECYCLING CENTER ENTRANCE / EXIT
WB-50 TURNING TEMPLATE
"STOP" SIGN
PROPOSED CAP SURFACE AREA
RECYCLING CENTER SIGN
RECYCLING CENTER ENTRANCE
LIMIT OF AREA TO BE RELOCATED UNDER REMEDIAL CAP
LIMIT OF PROPOSED REMEDIAL CAP AREA
MOVEABLE BLOCK WALLS
ASPHALT SURFACE
VEHICLE PULL-OFF AREA
PROPOSED GATE
VEHICLE ACCESS PATH
300 LF 4' HIGH CHAIN LINK FENCE ALONG WALL
CONCRETE RETAINING WALL
BRUSH DROP OFF AREA (70,000 SF)
SEPTIC HOLDING TANK
LIMITS OF CONCRETE
14' X 44' OFFICE
BULK ITEMS
METAL
OIL
CLOTHES
117 LF 4' HIGH CHAIN LINK FENCE ALONG WALL
CONCRETE RETAINING WALL
RECYCLING CONTAINERS
CARDBOARD COMPACTOR
LIMITS OF 8" THICK CONCRETE PAD
CATWALKS (TYP.) (3' WIDE, ENTIRE LENGTH OF CONTAINER)
PROPOSED CANOPY STRUCTURE
6" THICK CONCRETE SURFACE
EMPTY STORAGE CONTAINERS
EXISTING ROAD (TO BE REMOVED)
LIMIT OF PROPOSED REMEDIAL CAP AREA
PROPOSED SUBGRADE AREA/MATERIAL TO BE RELOCATED UNDER REMEDIAL CAP
PROPOSED 8' HIGH CHAIN LINK FACILITY FENCE (PART OF REMEDIAL CAP)
EXISTING ROADS TO BE REMOVED
PROPOSED POST AND RAIL FENCE
ACCESS GATE (TYP.)
BASIN OUTFALL PIPE
FRESHWATER WETLANDS LINE
EXTENDED DETENTION BASIN
RETAINING WALL
O'CONNOR DISOSAL AREA BOUNDARY
PROPOSED SUBGRADE AREA/MATERIAL TO BE RELOCATED UNDER REMEDIAL CAP
WATERCOURSE
WATERCOURSE

40 0 40 120
Scale 1" = 40 ft

Figure 3c: Plan of Recycling Center at OCDA
Restoration Area Planned Recycling Center Boundary

Source: Borough of Ringwood

Engineering & Land Planning Associates, Inc.

140 WEST MAIN STREET HIGH BRIDGE, NJ 08829
PH. 908-238-0544 FAX. 908-238-9572
A PROFESSIONAL ASSOCIATION
CERTIFICATE OF AUTHORIZATION NO.: 24GA28021500

NO.	REVISION	BY	DATE
3	REV. PER LIMITS OF CAPPING PLAN	PMH	12/12/14
2	REV. PER COMMENTS	GJS	5/9/14
1	REV. FOR SUBMISSION	PMH	3/3/14

12/12/14
DATE

WAYNE J. INGRAM
PROFESSIONAL ENGINEER
N.J. P.E. NO. 24GE048393

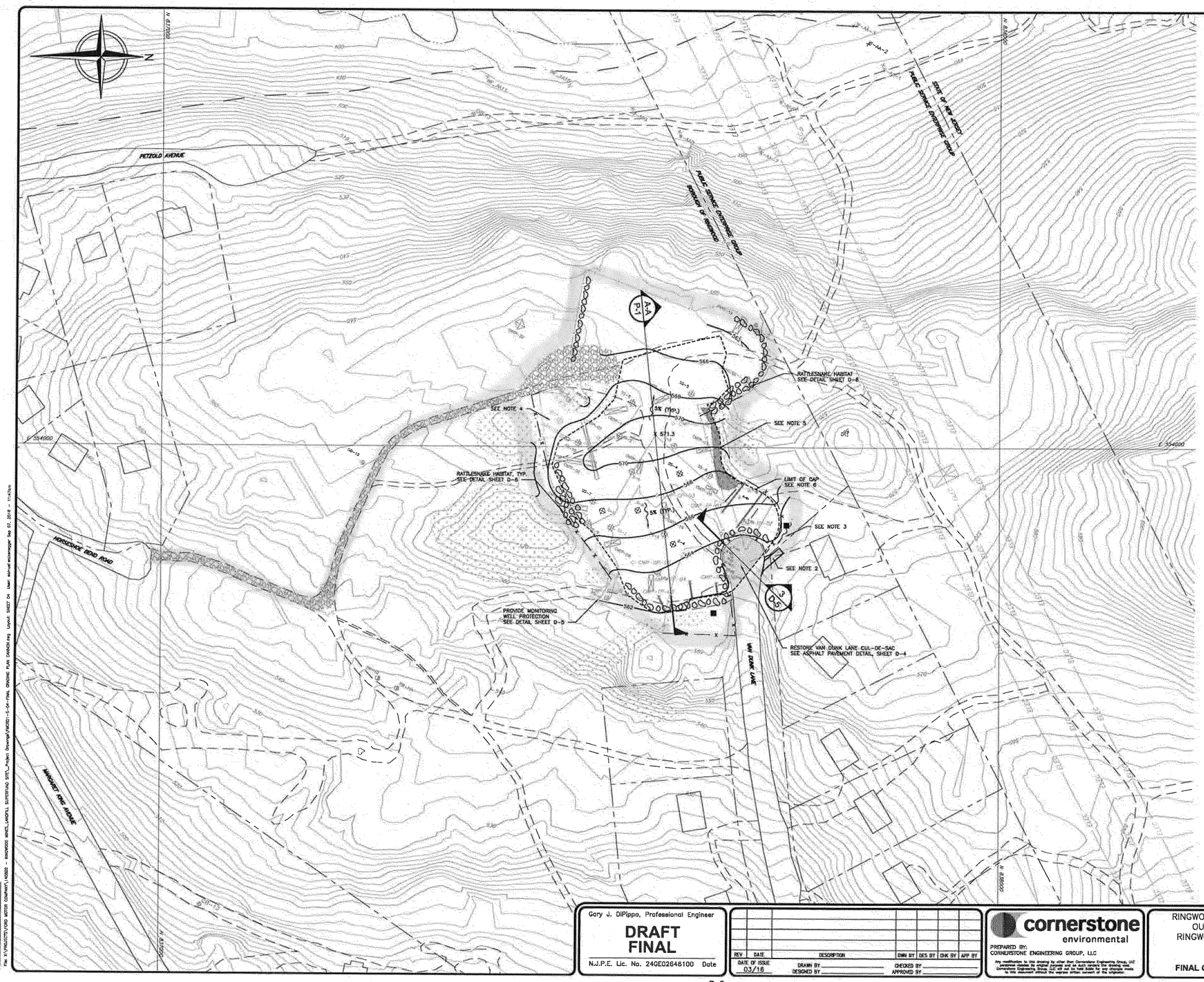
PROJECT:
BOROUGH OF RINGWOOD
RECYCLING CENTER SITE PLAN

PETER'S MINE ROAD
BLOCK 601 LOT 14 TAX MAP SHEET 6.03
BOROUGH OF RINGWOOD
PASSAIC COUNTY NEW JERSEY

TITLE:
SITE PLAN

JOB NO.:	13245C
SCALE:	1"=40'
DESIGNED:	PMH
CHECKED:	WJI
FILENAME:	03_SITE.DWG
DATE:	5/9/2014

DRAWING NO.: 3 / 11



LEGEND:

FOR ADDITIONAL LEGEND, SEE SHEET NT-1

- EXCAVATE FILL/WASTE AND RESTORE VAN DUNK LANE CUL-DE-SAC
- AREA OF SHALLOW FILL/WASTE PULL BACK (SEE NOTE 4)
- AREA OF BEDROCK OUTCROP FILL/WASTE PULL BACK (SEE NOTE 5)
- Restoration Area

Figure 3d: CMP Grading Plan

NOTES:

1. FOR ADDITIONAL NOTES SEE SHEET NT-1.
2. MAINTAIN ACCESS FOR RESIDENTIAL DRIVEWAY DURING EXCAVATION AND RESTORATION OF VAN DUNK LANE CUL-DE-SAC.
3. MAINTAIN POSITIVE DRAINAGE, MINIMUM 1% SLOPE TOWARDS CUL-DE-SAC, IN AREA OUTSIDE LIMIT OF ATTAINMENT.
4. AREA OF SHALLOW FILL/WASTE SHALL BE EXCAVATED AND PLACED UNDER THE FINAL COVER. EXCAVATED AREA SHALL BE RESTORED WITH CLEAN FILL, TOPSOIL AND VEGETATIVE COVER.
5. WHERE LIMIT OF ATTAINMENT BORDERS ROCK OUTCROP, SCRAPE OFF SUPERFICIAL FILL/WASTE, IF ANY, AND PLACE UNDER THE FINAL COVER.
6. ENTIRE AREA WITHIN LIMIT OF ATTAINMENT TO RECEIVE FINAL COVER. SEE DETAIL SHEET D-4.

50 25 0 50 100 150

SCALE: 1"=50'

Gary J. DiPippo, Professional Engineer

DRAFT FINAL

N.J.P.E. Lic. No. 24GE02646100 Date

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE 03/16		DRAWN BY _____ DESIGNED BY _____	CHECKED BY _____ APPROVED BY _____			

cornerstone environmental

PREPARED BY:
CORNERSTONE ENGINEERING GROUP, LLC

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RINGWOOD MINES/LANDFILL SUPERFUND SITE
OU2 DRAFT FINAL REMEDIAL DESIGN
RINGWOOD, PASSAIC COUNTY, NEW JERSEY

FINAL GRADING PLAN - CANNON MINE PIT AREA

SHEET NO. **CMP-3**

PROJECT NO. 140802

File: X:\PROJECTS\FORD MOTOR COMPANY\140802 - RINGWOOD MINES_LANDFILL SUPERFUND SITE_Project Drawings\[140802-1-5-04-FINAL GRADING PLAN CANNON.dwg Layout: SHEET D4 User: ashwell.mclaughlin Sep 07, 2016 - 11:47am

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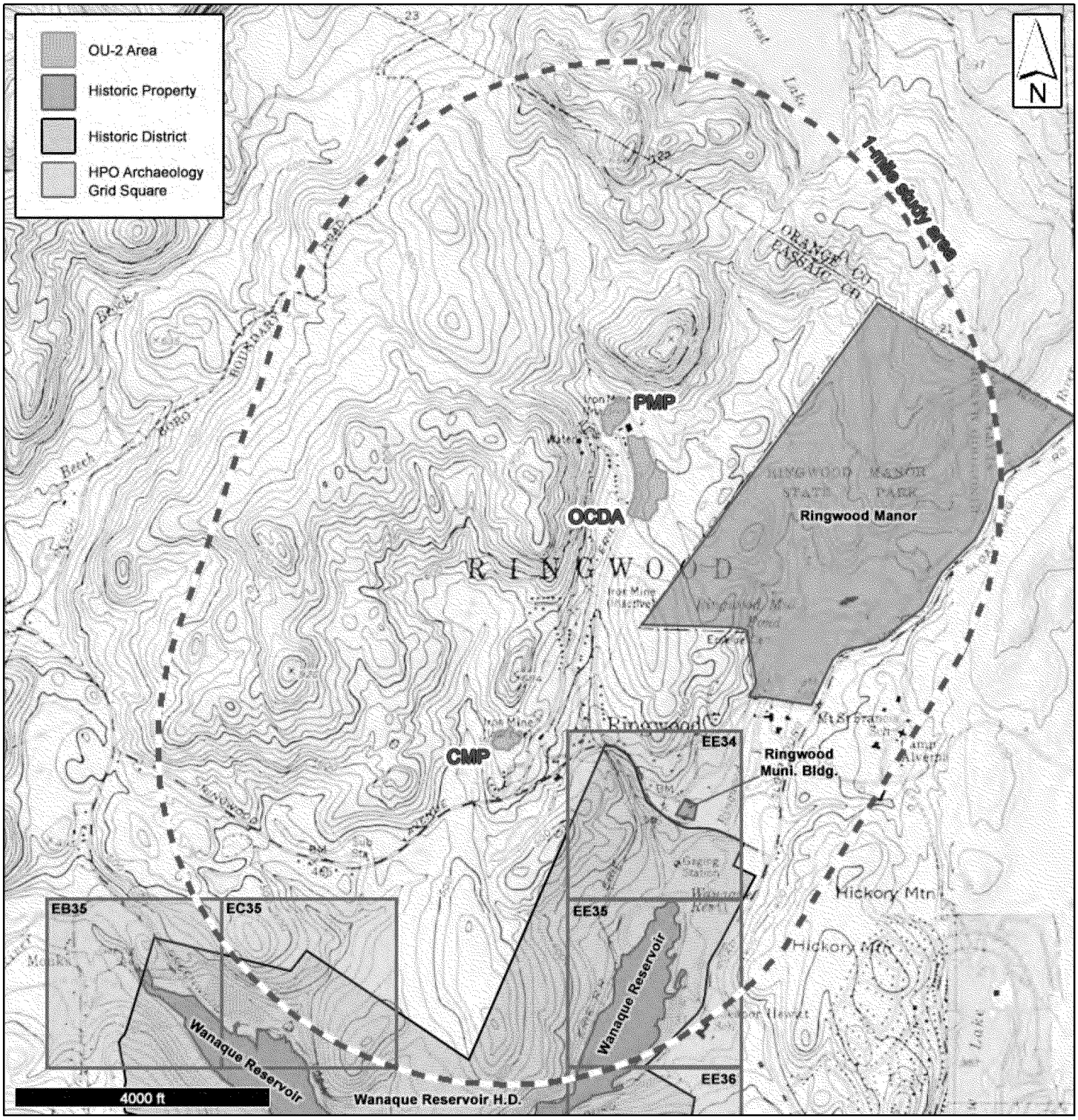

Base maps: Wanaque, NJ; Greenwood Lake, NY-NJ, Sloatsburg, NY-NJ; and Ramsey, NJ, USGS 7.5-minute quadrangles. Data: NJ HPO via NJ Geo-Web.

Figure 3: Inventoried Historic Resources in 1-Mile Study Area.

Phase IA Background Review and Archaeological Assessment
Ringwood Mines/Landfill Superfund Site Operable Unit 2

ATTACHMENT C

PHOTO LOG
FIELD INSPECTION OF JANUARY 16, 2016

Photograph 1. PMP Area--Looking northwest from the end of the pavement on Peters Mine Road. The open area in the foreground is the planned staging area and the fenced area behind it is mine pit area where remediation and construction of a cap will occur. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 2. PMP Area—Typical landscape of terrain in remediation area. Looking northeast. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 3. PMP Area—PMP pond in the middle of the remediation area. Looking south. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 4. PMP Area—Poured concrete building foundation near the southeastern edge of the remediation area. The foundation was built as part of the U.S. government rehabilitation of Peters Mine during the Second World War. Looking southwest. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 5. PMP Area—View from southwestern side of remediation area toward ruins of Peters Mine aboveground building complex on hillslope above mine pit. These ruins are the remains of the U.S. government rehabilitation of Peters Mine in 1942-1943 and are outside the remediation area. Looking southwest. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 6. OCDA—Chain link fence along Peters Mine Road marking western edge of the remediation area. PMP Area is at far left in distance. Hope Mountain is in background to right. Looking north. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 7. OCDA—Wooded wetland outside northeastern edge of area, looking toward OCDA. Looking southwest. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 8. OCDA—Typical hummocky terrain and thick vegetation in the central part of the area. Note debris on the surface. Looking northwest. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 9. OCDA—Typical sloping terrain and thick vegetation in the southern part of the area. Note surface-exposed angular boulders, some or all of which may be mine tailings, and the metal debris on the surface. Looking northwest. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 10. CMP Area—View from vicinity of remediation area of existing gravel access road that connects to the end of Horseshoe Bend Road to the area. Looking south. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 11. CMP Area—View from southern edge across area. Looking north. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 12. CMP Area—Non-structural pile of boulders at western end of area. Looking northwest. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.

Photograph 13. CMP Area—Typical terrain and vegetation of eastern part of area looking toward Van Dunk Lane. Looking northeast. Photo by C.L. Borstel, Tetra Tech, Inc., January 16, 2017.